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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,542	06/02/2006	Mark Joachim Mildner	7396.3008.001	5518
<div>7590 11/16/2007 Steven L Permut Reising Ethington Barnes Kisselle P O Box 4390 Troy, MI 48099</div>			<div>EXAMINER KIKNADZE, IRAKLI</div>	
			<div>ART UNIT 2882</div>	<div>PAPER NUMBER</div>
			<div>MAIL DATE 11/16/2007</div>	<div>DELIVERY MODE PAPER</div>

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/581,542	Applicant(s) MILDNER ET AL.	
	Examiner Irakli Kiknadze	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 13-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 14-22 is/are rejected.
- 7) ☒ Claim(s) 3-10 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>10/16/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Applicant is required to furnish a drawing under 37 CFR 1.81(c). No new matter may be introduced in the required drawing. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d).

Claim Objections

2. Claim 3 and 13 are objected to because of the following informalities: Claim 3 and 13 are duplicate claims. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 14-20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mihara et al. US PAP 2003/0048875 A1) in view of Rose (US Patent 3,903,424).

With respect to claim 1, Mihara teaches an X-ray tube comprising: an anode (10) and a cathode (9) are disposed opposite each other in a vacuumized inner space, the electrons produced at the cathode (9), are accelerated to the anode by means of impressible high voltage, and X rays are produced at the anode (10) by means of the electrons, the X-ray tube comprising a multiplicity of mutually complementary acceleration modules (11) comprising at least one potential-carrying electrode (10 or 9) (see paragraph 0027), a first acceleration module comprising the cathode with electron extraction, and a second acceleration module comprising the anode (10) with the X ray generation (Fig. 2). Mihara fails to teach that the X-ray tube comprises at least one further acceleration module with a potential-carrying electrode, the acceleration module for acceleration of electrons being repeatedly connectible in series as often as desired, and the X-ray tube being of modular construction. Rose teaches a linear accelerator comprising a modular construction acceleration module with a potential-carrying electrode, the acceleration module for acceleration being repeatedly connectible in series as often as desired (Figs. 1-4; column 1, lines 3-16) providing user with a modular construction enclosing an evacuated space with good structural rigidity and without permitting electrical breakdown between electrodes. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the modular construction acceleration modules suggested by Rose in the apparatus of

Mihara, since such a modification would provide user with the improved modular accelerator construction enclosing the evacuated space with good structural rigidity and without permitting electrical breakdown between electrodes prolonging the operational time of the X-ray tube.

With respect to claim 2, Rose teaches that the difference in potential between each two potential-carrying electrodes of adjacent acceleration modules constant for all acceleration modules, the final energy of the acceleration being a whole-number multiple of the energy of an acceleration module (Fig. 1; column 1, lines 10-15).

With respect to claim 14, Rose teaches that the acceleration modules include a cylindrical ceramic insulator (Figs. 1-4; column 2, lines 35-44).

With respect to claim 15, Rose teaches that the insulating ceramic has a high-ohmic interior coating (Figs. 1-4; column 2, lines 35-44).

With respect to claim 16, Rose teaches that the ceramic insulator (26) comprises a ridged exterior structure (Figs. 2-4; column 2, lines 35-44).

With respect to claim 17, Mihara teaches that the anode comprises a target for X-ray generation as well as an emission hole for X-radiation (see paragraph 027).

With respect to claim 18, Mihara teaches that the anode (10) includes a transmission anode, the transmission anode closing off the vacuumized inner space toward the outside (see Fig. 2; paragraph 0027).

With respect to claim 19, Rose teaches that the electrodes of the acceleration modules include a shield for suppression of the stray electron flow on the ceramic insulator (column 2, lines 35-44).

With respect to claim 20, Rose teaches that at least one of the electrodes and/or shields comprises spherically or conically designed ends for reducing or minimizing the field peak at the respective electrode and/or shield (see Figs. 2-4; column 2, lines 35-44).

5. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mihara et al. US PAP 2003/0048875 A1) in view of Rose (US Patent 3,903,424) and Rother (US Patent 6,567,500 B2).

With respect to claim 22, Mihara teaches a method of production of an X-ray tube in which an anode and a cathode are disposed opposite each other in a vacuumized inner space, electrons being able to be produced at the cathode, being able to be accelerated to the anode by means of impressible high voltage, and X rays being able to be produced at the anode by means of the electrons, the X-ray tube comprising a multiplicity of mutually complementary acceleration modules, each acceleration module comprising at least one potential-carrying electrode, a first acceleration module comprising the cathode with electron extraction, and a second acceleration module comprising the anode with the X ray generation (Fig. 2; see paragraph 0027). Mihara fails to teach that the X-ray tube is produced in a one-step vacuum soldering and comprises at least one further acceleration module with a potential-carrying electrode, the acceleration module for acceleration of electrons being repeatedly connectible in series as often as desired, and the X-ray tube being of modular construction.

Rother teaches that the X-ray tube is produced in a one-step vacuum soldering (column 2, lines 17-25) providing user with a vacuum enclosure having an improved joint between the x-ray tube components and the vacuum casing (column 1, lines 31-33).

Rose teaches a linear accelerator comprising a modular construction acceleration module with a potential-carrying electrode, the acceleration module for acceleration being repeatedly connectible in series as often as desired (Figs. 1-4; column 1, lines 3-16) providing user with a modular construction enclosing an evacuated space with good structural rigidity and without permitting electrical breakdown between electrodes.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the modular construction acceleration modules suggested by Rose and vacuum soldering as suggested by Rother in the method of Mihara, since such a modification would provide user with the improved method of production of the x-ray tube comprising the modular accelerator construction enclosing evacuated space with good structural rigidity and without permitting electrical breakdown between electrodes prolonging the operational time of the X-ray tube.

Allowable Subject Matter

6. Claims 3-10 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. With respect to claims 3-10 and 13, prior art fails to teach or make obvious an X-ray tube comprising at least one of the acceleration modules having a reclosable vacuum valve and/or vacuum seals on one side or on two sides as claimed in combination with all of the remaining limitations of the base claim and any intervening claims.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irakli Kiknadze whose telephone number is 571-272-2493. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Irakli Kiknadze
Examiner
Art Unit 2882

IK
November 9, 2007